THE

BOSTON MEDICAL AND SURGICAL JOURNAL.

New Series.] Thursday, September 22, 1870. [Vol. VI.—No. 12.

Original Communications.

APHASIA, AND THE PHYSIOLOGY OF SPEECH.

(Concluded from page 166.)

Language.—In its most comprehensive sense language includes the expression of ideas and emotions by speech, writing and gesture. It requires the use of the whole range of nervous centres, from the lowest to the highest. Articulate speech is an acquired function, and like all other coördinate muscular acts, depends upon a guiding sensation. The first step in the process of education is the establishment of an association between the organized auditory impressions and the centres of coördination necessary to the reproduction of corresponding sounds. This process is very gradual, and results partly from attention to spontaneous utterances and partly from imitation. The voice educates and corrects the ear, as well as the ear the voice. The association between the auditory impressions and the corresponding ideas may precede that necessary to speech. Children understand much that is said before learning to talk themselves.

The guidance of the ear is still necessary after facility of speech is acquired. In most other complex movements, the muscular sense, either alone or assisted by vision, as in locomotion or the manual operations, is a sufficient guide. That speech depends on the guidance of the auditory nerve, is evident from the fact that it rapidly deteriorates when hearing is lost. Dr. Kitto's detailed account of his own case, as related by Carpenter, is interesting. On becoming completely deaf, he felt so much pain in the vocal organs on attempting to speak under the guidance of an unused muscular sense, that his voice fell into disuse and remained so for years. It resembled that of a deaf-mute who has been taught articulation. Circumstances afterwards requiring him to speak much, he improved greatly by careful attention to the promptings of the muscular sense.

The following case is so instructive in many ways that I give it at length, as I received it from Mr. G. O. Fay, the Superintendent of the Institution for the Deaf and Dumb, Columbus, Ohio.

"The history of Morfier's case is as follows. In childhood he had occasional epileptic fits, affecting his sight, more or less, and blunting his mental faculties. At length, in 1866, he became totally blind, and entered the Blind Asylum here. Last spring (1869) he had severe pain in his head and eyes, resulting speedily in the restoration of his sight and in the loss of hearing. *Speech* was lost at the same time. He was received here as a pupil in September. He was not deficient in mental activity, and in a few weeks was quite at home among ordinary deaf-mutes. He was suddenly attacked, soon after, with headache, especially affecting his eyes, losing the ordinary voluntary and involuntary motions of the eyeballs and lids. The pain was intense, and evidently neuralgic. His hearing became perfect again, and after several days *he began to speak.* He recovered his general health and was about the house. After two weeks he had a sudden return of the pain, with total loss of hearing. He also lost, for a time, the control of his tongue and the sense of taste. After a few hours, sight returned. The next day he suffered intensely about the thorax and heart. Respiration and the heart's action would suspend every two or three minutes, for thirty seconds, or even a minute. These disturbances soon passed away, and for three weeks he has been precisely as at first—a *deaf-mute* with good eyesight and mental faculties."

Speech may be reflex under certain circumstances, as when a sudden sight, sound, idea, emotion, or pain, causes an exclamation. This is often observed in cases of complete aphasia, the extraordinary channels of nervous impulse remaining intact, or some extraordinary increment of power forcing a way through the usual ones. Continued automatic speech is also a common phenomenon. Talking to one's self, reading aloud, and conversation even, are often

performed unconsciously and with little or no voluntary effort.

Speech is, however, more intimately associated with ideation than other muscular acts, since it consists in a translation of ideas, in all their variety and detail, into words. This translation is not direct, since it is accomplished through the medium of remembered auditory impressions in the sensorium, but it implies the most extensive relations between the sensory word centres and the centres of ideation. The connection between ideas and unspoken words seems to be necessary and immediate, so much so that Max Müller, among other authorities, considers mental language absolutely indispensable to thought. This would be the natural result of concurrent education, ideas and words by close association suggesting each other reciprocally.

Writing is nearly allied to speech in that it expresses ideas by visible instead of audible representatives. Instead of the centres coördinating the movements required in speech, a centre associating certain movements of the hand is organized and employed. The ideas and words being the same, the nervous impulse seeks a new outlet of discharge.

Gesture is not, strictly speaking, a language, unless used to express definite ideas and words, as in the hand-language of deaf-mutes. It interprets best the emotional quality of thought, and performs this office better than speech. In disease affecting the power of speech it is less likely to be impaired than the power of writing, since it is a function pertaining to each of the motor centres. When all the modes of expression referred to disappear, it must be in consequence of some extensive or powerful cerebral lesion. In the general paralysis of the insane, for instance, is seen a gradual extinguishment of all power of expression, from disease involving not only the ideational but the motor centres.

Localization.—While feeling utterly incompetent to deal with so obscure a subject as that of cerebral localizations, one may still venture to point out the apparent tendency of thought on this question. The belief, for instance, in any system of organs corresponding to the mental faculties of either the phrenologist or the metaphysician, seems to be dying out, in spite of its resuscitation by the supposed discovery of M. Broca. The existence of the phrenological faculties and their location was assumed on inadequate generalizations, and the attempt to bridge the gulf between mind and matter in this way has failed. The metaphysical divorcement of the mental faculties from each other and from their physiological relations, is also in a fair way to be annulled, and hopes are entertained that the unity of mind may be established eventually on a scientific basis.

The difficuties of localization have been increased by false conceptions of the nature of the so-called mental faculties. These have been defined and classified for centuries according to metaphysical necessities as seen by the deceptive light of individual consciousness, with but little thought of their material connections. The metaphysician has had no incentive to locate faculties which he believed inherent in the immaterial spirit. The phrenologist, on the other hand, with a list of faculties still more artificial and arbitrary, has not hesitated to parcel them out, like the pieces of a dissected map, over less than one half the cerebral surface, leaving the other half functionless.

In considering an important cerebral function like the faculty of speech, it may be safe to assume that certain parts of the cerebrum are uniformly devoted to the same offices; though it is not impossible that in some cases there may be a substitution of one group of cells for another, just as an object may be equally well seen by different parts of the retina. The great conductibility of the grey matter as seen in the cord undoubtedly exists in the brain, and admits of the diffusion of impressions to an unknown extent. Therefore, however true the above assumptions may be of the main divisions of the cerebrum, it does not follow that a geographical distribution, as it were, of the mental faculties is possible in all their variety and detail. In speaking of the *faculty* of speech, the word should be divested of its stereotyped significance, and should be used simply in the sense of power or attribute. Speech is no more a mental faculty than locomotion. Its perfection requires the action of the whole series of anatomical possibilities—motor, sensory and ideational. It begins in the evolution of ideas, which implies the integrity of the cortical substance of the hemispheres. The memory for words must also be unimpaired. The power of voluntary transmission, the perception of auditory impressions, the proper functional activity of the centres of coördination and the nervous communication with the necessary muscles must be intact.

Those convolutions not directly connected with the central fibres are said, by

Dr. Broadbent, to be superadded in man for special functions, and are not to be found in the lower animals. In them, therefore, we may look to find the seat of that higher evolution of ideas which distinguishes the mind of man from the mind of brutes. In the basic ganglia we more naturally seek those centres of perception which fit the impressions of sense for the psychical interior, and those centres of coördination which translate the mandates of the will into motion.

Dr. Kahlbaum, in a paper on Sense-delirium (Zeitschrift für Psychiatrie, Berlin, Jan., 1866), says:—"The organs of perception are situated in the grey matter at the base of the brain, in the medulla and in the cord, especially in those parts of the ganglionic substance which appear in the process of development as primary organs, and exist in analogous forms throughout the whole range of the vertebrates. The organs of apperception are certain parts of the cortex of the cerebrum, near the longitudinal fissure, which constitute secondary centres in the order of development, and which become so large and intricate in the higher ranks of the vertebrates." He regards the centres of apperception as the true seat of consciousness and memory.

The first two stages in the elaboration of speech are in such close relation as to seem almost identical. This is probably due to the close association which exists as the necessary result of education between the ideas of things and the ideas of the corresponding words. Neill, Max Muller, Stewart, Schelling, Hegel, Descartes, and others, agree in supposing an intimate and necessary relation between thought and language. Dr. Robertson says:—"If processes of thought are carried on by aphasics, words are likewise present at the same time." (Jour. Ment. Science, June, 1867.) From this opinion he argues that most cases of aphasia are not amnesic, defects of transmission being sufficient to account for the symptoms, with the addition of those symptoms of mental weakness common to all hemiplegics.

Trousseau, who regards most cases of aphasia as amnesic, believes also in the interdependence of thought and language, and is therefore obliged to insist on the real impairment of intellect in spite of apparent intelligence. He thinks Lordat, who held a contrary opinion concerning the dependence of thought upon the mental use of words, deceived himself, and gave evidence in his own case of its incorrectness. (Clin. Lect., chap. vii.)

If the above views of the necessary relations of ideas and words are correct, their corresponding nervous centres must be coextensive, and we should naturally assign to verbal memory a seat in the grey matter of the convolutions. Dr. Moxon thinks the *ideas* of words are distinct and separate from the necessary coördinating centres, just as the ideas of all associated motions are supra-motory, and of all associated sensations supra-sensory.

Since M. Broca makes so wide a distinction between amnesic and ataxic aphemia, Dr. Bartholow thinks he would not expect to find the lesion in both in the third frontal convolution, and that cases of lesion in the motor tract cannot be quoted against his theory. (Jour. Ment. Science, April, 1865.) M. Broca's language, as previously given, warrants, I think, a different conclusion, and whichever hypothesis of the nature of articulate speech should be adopted, he *would* locate that faculty in the third left frontal convolution. But to limit the memory of words to a single convolution in one hemisphere while the associated ideas are widely distributed, as is supposed, in both, seems to involve an absurdity. So the location of a centre of muscular coördination for speech in the region usually assigned to ideation, seems contrary to the proper subordination of parts. We should look, then, for the centres of auditory perception and of muscular coördination in the basic ganglia or medulla, in more immediate relation with the nuclei of their associated nerves.

It will be noticed that in most cases of aphasia, the white as well as the grey matter is implicated. The favorite seat of lesion seems to lie between the corpus striatum and the third frontal convolution, often extending to the island of Reil, involving, therefore, more or less the central fibres of the hemispheres. Dr. Jackson accounts for the symptoms following lesions in this vicinity by suggesting that the corpus striatum is the way out from the hemispheres to those centres most immediately under the control of the will, and that disease in this vicinity affects the transmission of voluntary impulse. It is observable, he says, that the nearer the corpus striatum the lesion is found, the greater the defect of articulation. In wide-spread but slighter mischief, such as embolism of small arterial branches produces, the loss of memory is more marked. (Times and Gaz., June 23d, 1866.) Dr. Robertson believes the lesion in aphasia to be essentially a motor and not a mental one (Jour. Ment. Sci-

ence, Jan., 1867), and Drs. Letourneau and Cerise consider defective transmission as the chief difficulty in most cases. (Jour. de Méd. Mentale, Paris, Sept. and Oct., 1866.)

The involuntary and emotional ejaculations of aphasics are best explained by supposing the integrity of the coördinating centres, the transmission of voluntary impulse, or the memory for words being alone affected. Speech in such cases is simply a reflex phenomenon, some stimulus other than voluntary exciting these centres to automatic action. If this stimulus is emotional, as it often seems to be, we may suppose, with Dr. Robertson, independent channels for its transmission to the sensori-motor apparatus, which have escaped lesion. If, however, as Maudsley supposes, emotion is the sensibility of the nerve cells to their own ideas, its mechanism must be closely associated and coëxtensive with that of ideation. He denies that there are any good grounds for believing the nervous centres of emotion distinct from those of ideation. (Phys. and Path. of Mind, p. 137.) In such case we must suppose that some extraordinary increment of power forces its way through the obstructed channels.

Spencer, in his Essay on Music, considers language as two-fold—intellectual and emotional. All speech, he says, is compounded of words and tones, corresponding to ideas and feelings, cadence being the commentary of the emotions on the propositions of the intellect. It is true, there is an emotional language, but cadence is a small part of its method of expression. It includes facial movements, gesture and pantomime. It is more frequently automatic than speech, its involuntary and semi-conscious character making it a more truthful reporter of the mental states. Dr. Jackson, in reference to this subject, says: "It would seem that the centres for emotional, semi-voluntary, and involuntary actions are in the cord and medulla; but where the power is which sets them agoing is not so clear. (Times and Gazette, June 23d, 1866.)

The frequency of lesions in the *left* half of the brain in aphasia demands explanation. It undoubtedly depends on some difference of original structure, or of education. It is well known that there is a lack of symmetry in the arrangement of the convolutions; but what this implies is not so evident. Gratiolet states that the left frontal convolutions are developed earlier than the right. (Mémoire sur les Plis cérébreaux de l'Homme et des Primates, Paris, 1854.) Carl Vogt denies this, while Bischoff does not mention it, though he sees much significance in the comparatively undeveloped third frontal convolutions of apes. (Die Grosshirnwindungen des Menschen; München, 1868.)

Unilateral muscular acts are, however, matter of daily observation. All right-handed acts, of which writing will serve as an example, are guided by the left hemisphere, and cease at once from lesions producing right hemiplegia. If it is said that on account of direct as well as crossed transmission the ideas of unilateral movements become organized, on both sides alike, why does not the right hemisphere in lesions of the left still carry on the right-handed operations? If it is further said, that the united action of both hemispheres is required, why does not general paralysis follow damage to either?

The theory of Dr. Moxon furnishes the most plausible explanation yet offered, of the occurrence of aphasia in left-sided lesions of the brain. (Med.-Chir. Rev. April, 1866.) It is based upon the observation that in many simultaneous movements of the hands, for instance, the attention and will are only occupied with the movements of one, the other following. The attempt to make opposite revolutions with one's hands at the same time usually results in both joining in the motion of that one to which the attention is directed. From an analysis of this and similar facts, he draws the following inferences. (1.) "That attention to one hand only is sufficient to guide the other in the same motions at the same time. (2.) That it is very difficult, and without special education impossible to give simultaneous attention to the two hands. In short, that we have but one attention for two hands." He further says, "Now as education is based on the memory of former acts, and as memory resides where attention was in action, education of similar simultaneous motions will grow up on one side, that on which attention was operating. No education will grow up on that side which habitually follows. The accumulation of skill or memory on one side would suffice for the two, in consensual action, while the accumulation of skill by attention alternately to either side would be unavailable for simultaneous motions, on account of the impossibility of using both stores, by the attention, at the same time; so that in regard to simultaneous motions of the two hands, there would be no need of educating the two sides, it being easier to educate one."

From these premises he argues that as the organs of speech are bilateral, with inde-

pendent nervous connections, and yet so joined as to render consensual all movements used in speech, there is no necessity for educating the two sides; in fact, a unilateral education would be the easier. "So that all that store of recollections of movement associations which constitutes the power of speech will be located in the left brain, which corresponds to the right tongue, there being no remembered results of attention, that is, no education, on the other side, where attention never operated. Yet in the right brain there will be all the organs which, if educated, would become the seat of speech-power: so that the ground-plan symmetry of the organs of speech is preserved."

This theory resembles that of Valentin, who attributes the consensual motions of the eyes to the action of the will on one of them, the other following by virtue of the peculiar arrangement of their nervous connections. (Physiology, Trans. by Wm. Brinton, London, 1853.) It is also rendered more plausible, perhaps, by the increasing asymmetry of the convolutions in man. Dr. Hughes Bennett, however, thinks that the use of the side which follows amounts to education of it, and asks why aphasics do not learn to talk with the right. Dr. Jackson believes Dr. Moxon's theory an important one, but thinks both sides are educated, and that the left begins to act; and that those educated actions which have by habit become involuntary are due to the action of the right side. This he does not attempt to explain.

Some ingenious speculations which have been made upon the causes of right-handedness may have a bearing on the left-sidedness of the lesion in aphasia. For instance, Hyrtl has advanced the theory that right-handedness is due to the better nutrition of the right side, in consequence of the more direct, forcible and larger current of blood which flows through the right subclavian. Left-handedness, which occurs about twice in one hundred individuals, he attributes to anomalous origin of the subclavian, or to transposition of the heart. (Topographische Anatomie, vol. 2, Wien, 1865, p. 291.)

Baillarger, on the contrary, considers right-handedness due to the better nutrition of the left brain, which depends on the following conditions: "When fluid passes suddenly from a tube of large to one of small calibre, the velocity is increased. The right carotid is separated from the aorta by the innominata, so that blood flows through a vessel of gradually decreasing size; but the left carotid rises directly from the arch, so that by this law, the blood moves more rapidly, and the activity of the left cerebral circulation is increased, thus accounting for the greater force and dexterity of the right side of the body." (Intercranial Circulation. Boylston Prize Essay, 1867: by Thomas Dwight, Jr., M.D. Quoted from the Gaz. Heb., 1865, p. 280.)

It is doubtless a fact that the right side of the body, and the left side of the brain, are better nourished than their opposites; but that this is originally due to arterial asymmetry is not clearly shown. Both these theories cannot be correct, since what Hyrtl says of the right subclavian would seem also to apply to the right carotid, and what Baillarger says of the right carotid would seem to invalidate Hyrtl's conclusions about the right subclavian. I am not aware that any perceptible difference exists between the radial pulses of the two hands; and Dr. Dwight informs me that in twelve cases of transposition of the heart which he has heard of, at home and abroad, each patient was right-handed. Baillarger's theory may find some support in the rather more frequent occurrence of embolism on the left side of the brain. In fact, it is to some anatomical difference as yet unknown or misunderstood that many attribute the almost uniform existence of the lesion in aphasia on the left. In the few cases of aphasia and left hemiplegia which occur, or when the lesion is found on the right side, information concerning the patient's right or left-handedness would be interesting.

Conclusions.—The following conclusions, it is believed, may be safely adopted:

I. Most cases of aphasia include both aphemia and agraphia.

II. The concurrence of aphasia and right hemiplegia is very common. In such cases the mental impairment is not decidedly greater than in left hemiplegia without aphasia.

III. The symptoms in aphasia may have a decided mental or motor aspect, or partake of both characters.

IV. Theoretically, the lesion in aphasia may impair the power of speech by producing disorders of ideation, loss of memory for words, interruption of voluntary transmission, interference with auditory impressions, defects of co-ordination, and paralysis of the muscular apparatus. Practically, it gives rise to two or more forms of disorder.

V. As a rule, the lesion will be found in the anterior lobes, and in the left anterior lobe in a proportion of about 15 to 1. There are well marked exceptions to the proposed laws of MM. Bouillaud and Dax, while the

evidence in favor of M. Broca's location is quite insufficient to justify his inferences.

VI. The lesion in aphasia usually involves the white as well as the grey substance, and is often due to embolism of the left middle cerebral artery, followed by softening of the parts supplied.

VII. There is anatomical evidence of the most complex and delicate systems of cells and fibres in the cerebral convolutions, and it is a fair inference that as in the cell groups of the cord, medulla, and basic ganglia, there are here carried on special functions, but of a higher order.

VIII. There is good evidence of an increasing elaboration of structure and function in ascending from the cord to the convolutions. This ascending scale may be arbitrarily divided into centres, at once independent and subordinate, having general analogies of action, with special differences, but which are difficult of precise limitation.

IX. The centres of muscular coördination for speech have with most reason been assigned to the medulla, or in proximity to the nuclei of the controlling nerves.

X. The faculty of articulate speech, in its mental as well as its motor aspect, is an acquired one, depending on the gradual organization and association of auditory impressions, ideas and movements.

XI. It is not impossible that the same convolutions uniformly perform the same functions, or that groups of ideas may be related by a superficial contiguity in the cortical substance; but there is no good evidence that such groups correspond to any of the so-called mental faculties, and no such faculty has yet been definitely located.

XII. There is some evidence of both asymmetry of structure, and difference of function, between the two hemispheres, which is at at present best accounted for by the theory of unilateral education, depending on anatomical differences not yet clearly understood.

CASE OF STRICTURE OF RECTUM FROM CANCEROUS INFLAMMATION. DEATH.

By E. P. Hurd, M.D., Newburyport, Mass.

I shall endeavor, very briefly, to narrate the principal particulars of this interesting case. The subject was a patient of Dr. Perkins, of this city.

Mrs. ——, of Newburyport, for some time ailing, took her bed in February last. The well-marked symptoms of peritonitis gave place to those of obstruction. At first, scanty discharges were obtained by means of croton oil and colocynth, purges and enemata; the latter soon failed to have any effect. The abdomen became enormously tympanitic. A gurgling sound, like that of pouring water from a bottle, was constantly heard on auscultating. Entire abdomen resonant on percussion. The usual painful symptoms of extreme abdominal distention were experienced. By and by she could not sleep, except in erect posture. Diagnosis, intestinal stricture; seat of stricture undetermined.

Treatment, mainly palliative. Ice poultices had been tried with benefit. The resources of materia medica had been taxed by my indefatigable *confrère*. Turpentine and other alterative and carminative remedies failed to give much relief. Progressive failure of the organic functions. Emaciation. For more than three months before death there had been no movement of the bowels. Enema-pipe entered but a short distance, and injections immediately returned. Patient was sustained on liquid food. Death, which took place about the first of July, was preceded by stercoraceous vomiting.

Autopsy (performed by Drs. Howe, Snow, Cross, and myself) revealed an enormously distended colon. The transverse colon, blown into a retort-shaped body, occupied the anterior portion of the abdomen, the lateral and superior regions; circumference, 21 inches. This gut resembled a dried bladder, not collapsing on puncture. Stomach and small intestines of natural size, and full of stercoraceous matter. The uterus was retroflexed from superincumbent pressure. The left ovary was encephaloid, and uterus, bladder and upper fifth of the rectum were bound down to the sacrum by constricting bands, the product of meso-rectal inflammation. The canal of the bowel was obliterated at this point. Neither above the seat of stricture nor below could a bougie be made to pass the constriction. Numerous small scirrhous nodules—apparently passive—from a pea to a filbert in size, studded the meso-rectum and the fascia of the iliacus muscle.

From the experience of the above case, which by the kindness of Dr. P. I was allowed frequently to examine during the life of the sufferer, I think I am warranted in concluding that steadily augmenting tympanites, accompanied by fæcal retention and obstruction, is pathognomonic of intestinal stricture; that, *a priori*, peritonitis points to organized inflammatory lymph as the constricting cause, and that the continuance for a considerable length of time of the tympanites and the obstruc-

tion, indicates a stricture near the termination of the large intestines.

INEQUALITY IN THE MILK OF THE TWO BREASTS IN WOMAN.

Translated from L'Union Médicale, by FRANK W. DRAPER, M.D., Boston.

M. LOUIS SOURDAT recently reported to the Academy of Sciences in Paris the notes of a case of inequality in the amount and composition of the milk secreted by the two mammæ of the same woman. Having observed that a nursing child showed an evident preference for the right breast of its mother, a preference which had been remarked also in two previous children, and having noticed, moreover, that this breast was of larger size than its fellow, and gave nearly twice the amount of milk, he examined a number of specimens of the secretion and arrived at the following results:

1. The composition of the milk of the same woman taken simultaneously from both mammæ is very variable from day to day, even when there is no appreciable change in the general condition of the woman. A temporary fatigue, or a slight change in diet, or a more or less prolonged retention of the milk in the breasts, suffices to cause these variations. In eight analyses the weight of the dry residue varied from $10\frac{1}{100}$ per cent. to $13\frac{7}{100}$ per cent. The specific gravity likewise varied from 0.980 to 1.031.

2d. The composition of the milk varied in the two breasts at the same time. The secretion of the right side, which was far the more abundant, was also richer in the solid constituents.

3d. Under these conditions, butter was generally in much greater amount in the milk of the right breast than in that of the left. The appearance of the specimens would itself alone confirm these last differences.

4th. The nitrogenous substances, casein and albumen, like the butter, were formed in the right side more abundantly.

5th. The soluble principles were, it is worthy of note, found in five analyses to be nearly equally distributed in the two sides. Yet, in two instances in which there was a slight difference, it was found to be in favor of the side containing the less butter.

A similar variation pertained to the salts; so that it would seem from this that there exists a certain correspondence between the fatty and the nitrogenous substance on the one hand and the soluble elements on the other.

REJOINDER TO CERTAIN EDITORIAL REMARKS ENTITLED "A RESOLUTION WITHOUT LEGAL FORCE."*

By J. L. SULLIVAN, M.D., Boston.

MESSRS. EDITORS,—An attentive perusal of your editorial remarks bearing the above title, convinces me that you have misunderstood, if not the force, at least the *purpose* of the resolution. Moreover, you have wandered to the consideration of another and very different question, viz., the expediency and possibility of accomplishing the end contemplated thereby. This has been done in such manner as to make it appear doubtful whether you have written in the interest of the Massachusetts Medical Society, or of those whose connection with it is deprecated by the majority of its members, including yourselves.

In presenting my own views, I shall approach the legal questions involved in the diffident spirit which characterizes your own remarks, alluding to these questions as briefly as the nature of the subject will admit.

I will begin by repeating the resolution:

"*Resolved*, that the Massachusetts Medical Society hereby expels from fellowship all those who publicly profess to practise in accordance with any exclusive dogma, whether calling themselves Homœopaths, Hydropaths, Eclectics, or what not, in violation of the Code of Ethics of the American Medical Association."

The provisions of the Act of Incorporation bearing upon the above are as follows:

"The Fellows shall have power to suspend, expel, or disfranchise a Fellow of the Society."

"The Fellows of the Society shall have full power and authority to make and enact such Rules and By-Laws for the better government of the Society as are not repugnant to the laws of the Commonwealth."

By this provision the Society is empowered to create and put in motion the machinery by which the power and authority delegated to it may be made practically available. But in the exercise of this authority it cannot ignore the principles of justice which the laws and statutes of the Commonwealth are supposed to embody. Hence, "although the Society has the right

* Vide Boston Medical and Surgical Journal for July 28th, 1870.

to make By-Laws and to prescribe regulations for admission and membership, these regulations must be reasonable;" although it is competent "to suspend, expel or disfranchise a Fellow, it can do this only for reasonable cause."

What is "reasonable cause?"

On reference to the By-Laws it will be seen that the main purpose of these enactments is to protect the Society against malfeasances on the part of its members, amongst which malfeasances are included certain acts and practices not criminal in themselves, but which for good and sufficient reasons the Society has forbidden to the Fellows. These acts and practices are offences not against the public, but against the Society. Hence, while the Society's judicial powers are limited by its Charter to the infliction of certain penalties designated therein, as respects offences punishable by these penalties, the Charter is silent. For obvious reasons it is left to the Society to determine what shall constitute an offence against itself. One of these reasons, it is fair to presume, is that in the opinion of the Legislature the Fellows were and always would be the natural and proper judges. Nothing, however, can be clearer than that while the Society's authority to discipline or punish an offending member is, by law, restricted to the infliction of certain prescribed penalties, it is, likewise by law, left free to determine what shall constitute an offence against itself.

Hence, any act or practice—however trivial in itself—which the Society has for good and sufficient reasons pronounced injurious to its welfare will constitute an offence against the Society, and the commission of such act or practice in contempt of the Society's prohibition will afford reasonable cause for the expulsion of a Fellow. If it were not so we should have the curious anomaly of an incorporated body without authority to regulate the conduct of its members in matters however deeply affecting its prosperity, honor or existence; we should have the spectacle of a Society bound hand and foot by its own Charter, the surrender of which would be the wisest step it could take. If the views of the Journal are correct, such, at this moment, is the helpless situation of the Massachusetts Medical Society, invested with the shadow but not the substance of authority—saddled with a Charter which forbids it to protect itself. That this is the "force and purpose" of the Charter is too absurd for belief. The common sense of all but those who wish it protests against putting this forced construction upon that document, and thus by implication imputing not only to the Legislature which granted, but to the organization which accepted it, lack of ordinary wisdom and foresight. In short, the question before us is not as to the existence of power, but as to the manner in which that which is may be lawfully exercised.

We come now to what is in reality the main question. It may be thus stated:

Is the particular act or practice specified in the resolution prejudicial to the interests of the Society, and therefore does it afford reasonable cause for the expulsion of a Fellow who may commit the same in contempt of its prohibition? Upon this question the Society has already virtually sat in judgment and rendered an affirmative decision. It has done this not only by the passage of the resolution at the late annual meeting, but long before, as appears by By-Law 1st, paragraph 4th, which provides that "no person shall be admitted a member of the Society who *professes to cure diseases* by Spiritualism, Homœopathy or Thomsonianism;" in other words, who professes to practise in accordance with the exclusive dogmas indicated by these terms. Now, if to do this affords reasonable cause for exclusion from membership, *a fortiori* it affords reasonable cause for expulsion therefrom. Who does not acknowledge gross and manifest inconsistency in permitting a Fellow of the Society to commit with impunity the same act which, were he not already a Fellow, would render him ineligible to membership? To expel a Fellow of the Society because he has been convicted of a certain act is no more unjust or illegal than to exclude a candidate for admission for the same cause. If the Society may lawfully do the one, it may lawfully do the other also; if the one is unjust and illegal, the other is also. That the Society is competent to do either cannot be disputed on any tenable ground. That the positions thus far maintained by the writer are correct is virtually admitted by the Journal, although it endeavors to escape from the conclusions which inevitably follow by attempting to pervert the meaning of the resolution. "The force and purpose of the resolution," so the Journal affirms, "are to expel those who embrace the doctrine" formularized in any exclusive dogma. This is purely an assumption, neither supported by facts nor warranted by the language of the resolution.

With equal truth it might be assumed that the force and purpose of the statute against adultery are to punish not only those who commit the overt act or crime of adul-

tery, but those also (and such there are) who hold that adultery is an agreeable diversion.

If the assumption of the Journal were correct, the purpose of the resolution would indeed be not to forbid members from committing an act injurious to the Society and to expel them therefor, but to subject them to a tyrannical persecution for opinion's sake. That this is the purpose of the resolution, or that its language can be fairly construed to mean this, none but the Journal and the parties at whom the resolution is aimed, will pretend. Who doubts that a member of the Society may hold that "the moon is made of green cheese?" Who denies that he may believe that the solution of a single grain of table salt in a body of water having a volume greater than the sum total of the matter composing the universe will so impregnate the same with medicinal virtues that a single drop will suffice to cure the itch? Who claims that a candidate may be justly excluded, or that a Fellow may be justly expelled on the ground of his holding these or any other theoretical views, however heterodox or absurd? It is for *acts* not *opinions* that the Society may hold its members responsible. It is against *acts* and *acts* only that the provisions of the By-Laws are directed. Thus, an individual "who publicly advertises for sale, &c., any medicine the composition of which he keeps a secret," commits an act; if "he offers to cure any disease by any such secret medicine," he likewise commits an act; for either of these acts, "if a Fellow of the Society, he shall be liable to expulsion." "Any attempt to disorganize or to destroy the Society" is an act, which renders the perpetrator liable to expulsion. "To profess to cure diseases by Spiritualism, Homœopathy or Thomsonianism" is an act, which renders a candidate ineligible to membership. Observe—the ineligibility arising from this cause is predicated not upon the holding of objectionable views, *but upon the commission of an act, viz., "to profess to cure diseases" in accordance with certain so-called methods.*

In like manner to "publicly profess to practise in accordance with any exclusive dogma" is an *act*, and one, too, which, in the nature of the case, must affect the Society either for good or for evil, whether for the one or for the other it is for the Society to determine. In the latter event, that is, if the act is pronounced injurious, the Society indubitably possesses the power and authority to prohibit the same on pain of expulsion or whatever penalty it may lawfully inflict.

To the triumphant inquiry of the Journal: "If the Homœopaths should at any time obtain a majority of the Society, would it be thought reasonable and within their legal powers to exclude or expel all other practitioners?" I answer, unhesitatingly, Yes, any member or members of the supposed minority who should PUBLICLY PROFESS *to cure diseases in accordance with any exclusive dogma*, as, for example, ALLOPATHY.

In what way the expulsion of a Fellow for the cause stated in the resolution may be lawfully effected, is another and very different question, and the last which I purpose here to consider.

Although the Society is clothed with authority which it may exercise in a lawful manner, it cannot be denied that an individual member is in possession of rights of which he can be deprived only in the same manner. One of these rights may be that he cannot be punished for an offence for which he has not been formally tried and convicted. It may be true, therefore, that one or more members cannot be summarily ejected by the passage of a resolution such as was adopted at the annual meeting in May. That such resolution practically amounts to nothing but an expression of opinion, is quite possible. That to procure this expression of opinion was the object for which the resolution was brought forward, is also quite possible. *But that the Society may make and enact a By-Law forbidding any member to "publicly profess to practise in accordance with any exclusive dogma," and that to the infraction of this By-Law it may attach the penalty of expulsion, must be conceded.*

Having disposed of the questions of possibility and legality there remains the question of expediency, apparently an important one in the estimation of the Journal. To this question I shall briefly allude. When the *honor* of an individual or a Society is at stake, considerations of expediency affect none but sordid minds. The "grave doubts," referred to by the Journal, are entitled to trifling weight in view of the friendly attitude towards irregular-regular practitioners maintained by the great majority, as well as the most influential of those who profess these doubts and the peculiar advantages to themselves accruing therefrom. That neither the doubts nor the advantages are shared by the majority of the Fellows, is evident from the unanimity with which the resolution was adopted.

While, therefore, I would ostracize no man for opinion's sake, while I will maintain that both the medicine and the dose should be left to the judgment of the practitioner, I differ *toto cœlo* from the advocates of the traditional policy pursued towards those whose connection with the Society, it is agreed, is anything but advantageous and reputable.

Exclusive dogmas have in all ages proved not merely hindrances to the progress of scientific medicine, but the favorite and most effective weapons of quackery. There is not one such dogma to-day extant which is not put to this use. He who professes to practise in accordance with such is of necessity affiliated with charlatans. Besides, he forgets or ignores the truth enunciated in the preamble of our Charter (to which the Journal alludes as "affording little to aid members in this emergency," although in my opinion it sheds a flood of light upon it), viz., that it is "medical institutions founded on liberal principles," as well as "encouraged by the patronage of law," which are universally acknowledged as a benefit.

He whose knowledge of the art and science of medicine, and whose method of practice is, by his own confession, narrowed to a single formula, furnishes satisfactory evidence that either the "liberal principles," to inculcate and perpetuate which the Society was founded, are to his apprehension but as a sealed book in an unknown tongue, or that, having been educated in these principles, he has seen fit to abjure them.

The time has come when the Society should refuse to hold fellowship with such, not because his opinions are at variance with the majority, but because by publicly professing to practise in accordance with one or another exclusive dogma, he as publicly fraternizes with ignorance, empiricism or worse. The time has come, too, when that noble system of regulations, the Code of Ethics of the American Medical Association, already formally adopted by the Society, should be recognized here, as elsewhere, as the supreme authority for the government of the profession, and when any contradictory provisions in our existing By-Laws should be, at the earliest opportunity, repealed.

A French Society has been organized, the members of which bequeath their bodies to the college dissecting rooms.—*Richmond and Louisville Medical Journal.*

Selected Papers.

ON THE INFLUENCE EXERTED BY CHLORAL ON THE PAIN OF PARTURITION.

By E. Lambert, Esq., Paris, late House-Surgeon in the Maternity Hospital, Edinburgh.

The subject to which I have the honor of drawing the attention of your Society will possess a peculiar interest in your eyes from the fact that it is directly connected with the name of one so justly memorable as Sir James Simpson. It will command this interest at least, that it purports to bring before you and before the profession the facts known to myself in connection with the later researches of Sir James Simpson in the direction of "obstetric anæsthesia," and I cannot but hope that it may be in the power of others to supplement these by many other observations.

I deeply regret that the few facts here narrated could not be brought collectively under the cognizance of his master-mind, and that I was not permitted to take counsel of his mature experience as thoughts forced themselves upon me during the prosecution of these researches.

When chloral was brought before the profession, Sir James was foremost in prosecuting inquiry into its therapeutic value. I do not know whether he had applied it in private obstetric practice, but his paper on chloral, of 1st January, in the *Medical Times*, makes reference to the subject. He states that he has seen the parturient womb contract regularly whilst the patient was unconscious. During the last fortnight of the year 1869, he had attended, with my colleague Dr. Walker, a case in charge of Dr. Somerville, but I have no notes of the results. On the 31st December I requested his attendance; the case is related under No. 1.; there was absolute intolerance of the medicine. The next case occurred 2d January, 1870, and the important results given in No. II. were observed. The last case attended by Sir James Simpson, in connection with the Maternity practice, dates 4th January, No. III. Chloral, it was apparent, could not claim to supplant chloroform, since it abolished consciousness to a less extent, placing the patient as it were midway between consciousness and unconsciousness, and rendering her incapable of that control which is essential during the second stage; but this admission only placed in a stronger light the admirable properties of the agent when applied to the

relief of pain during the first stage of labor, at a period when it is generally conceded that chloroform is hurtful.

As *the* hypnotic of this first stage, chloral stands as yet unrivalled; we have only to remember that opium, our only sure refuge, must be administered with the knowledge that we are conspiring, though for a higher end, against the course of labor.

It is with an earnest wish to further the progress of our art that I invite the attention of your Society to the bare statement of the whole facts which have come under my observation. None more than yourselves will feel the interest that attaches to researches in this particular direction—none, I am sure, will be more anxious to employ the keen edge of criticism to the profit of experimental science.

[Here follows a series of cases, illustrating the use of the drug. We are obliged to omit them for want of space, giving only one as an example.]

Agnes P., aged 22. Primipara. Admitted to the Maternity Hospital at 6 P. M., 2d January, 1870. At 7.30, the os was the size of a half-crown; the head, first position, was entering the pelvis, the membranes entire. The pains were strong, at very regular intervals of five minutes. In the intervals of pain has constant slight rigors, which become much stronger during the pain. At 9.25 the membranes ruptured spontaneously, and at 9.30 the head was on the perinæum.

Sir James Simpson attended at 9.50; chloral ʒi. was then administered. 9.55. Says she feels the pains less. At 10, ʒi. again given; the rigors ceased, and the patient seemed to sleep in the interval of a pain. At 10.4, she is remarkably calm. At 10.9, there was a slight rigor, then a severe pain, and a sharp cry; and at 10.10 the head was born. Answered questions; said the pains were much less severe since she took the medicine, and that she slept in the intervals. 10.30.—Sleeping very quietly, answered a question and fell off again immediately. Removed placenta from vagina without any indications of consciousness on the part of the patient. 3.30.—Woke and said, "where am I?" Hearing her child cry, said, "whose child is that?" Did not remember birth of child; took food, and slept soundly till morning. Questioned next morning, she affirmed that she only remembered looking up and seeing three doctors; remembered taking the medicine and nothing more; knew nothing of the birth of the child.

Dr. Gordon accompanied Sir James Simpson. She made an excellent recovery. Her child had spina bifida. The case was reported to the Society by Dr. C. Bell. Chloral was administered to the infant, whose horrible cries were quieted by it; the spasms were also stopped by its influence.

Is it just to incriminate chloral when we want any correlative proof that it has any tendency to affect injuriously uterine contraction? Before offering any conclusions, I have to add a few remarks on the administration of chloral, presuming that their importance is only secondary in place and not in degree. Sir James Simpson insisted strongly on the influence of external impressions upon the character of the anæsthesia under chloroform, and his rules should be more stringently enforced in the exhibition of an anæsthesia of less potency. What we aim at with any medicine is the attainment of a desired end, with the use of the smallest possible quantity. This is especially urgent with a remedy administered by the mouth. Choral, too, has a very complex action; capable of suppressing reflex action and also consciousness, it seems, *when given in excess*, occasionally to exercise a stimulant action on the cerebro-spinal system, producing disagreeable effects, not compatible with its introduction to private practice; effects, however, be it said, transient and never dangerous.

On this account it is imperative that the patient be surrounded by conditions tending to perfect repose of mind and body; and when there has been previous excitement, we must proceed very cautiously. For the attainment of so delicate a result as anæsthesia—"Thus far and no farther"—great care is required, and we must do with chloral as we do with chloroform, administer it tentatively by fractional doses. I have sat for two hours by a pregnant patient brought into the Maternity in the middle of the night, in consequence of severe vomiting; and I have given chloral in successive small doses, watching the case until I knew that perfect rest had been induced; and the next morning, after sound sleep, the cure was perfect. The first successful case I saw treated by Sir James Simpson (Case II.) was a type of good practice, but it was favored, as no other case has been since, by the general condition under which it occurred—"a quiet nature of woman," I have said, "devoid of excitability—a private patient in the hospital, not surrounded by half-a-dozen tattling drones, or curious mutes." Perfect quiet; night time. Case VIII. offers an exact counterpart of this; the conditions there were most unfavorable for the trial.

In the homes of our Scotch laboring classes, the chamber of a parturient woman is the resort of all the gossips who can gain admittance; whilst the absence of almost every comfort is rarely pushed to the extreme limit of abstinence from stimulants. I made mistakes when I began to experiment, and this warning, if necessary, will prevent their repetition. Cases IV. and VI. were especially refractory, from causes above mentioned. The production of anæsthesia is favored by all that lulls the senses. I have failed at the Maternity to quiet a wilfully noisy, garrulous patient, even with chloroform, given for nearly an hour to the extent which is permissible in parturition. Chloral given in massive doses to an excited patient, whilst it stupefies consciousness, intensifies reflex irritability, —Case VIII.;—or where it quiets reflex action, may awake unconscious cerebral activity—Case X. Persons present at the administration of anæsthetics in midwifery should therefore be competent to understand suggestions or obey instructions.

Noise must be suppressed; no talking on the part of the patient encouraged; her movements controlled without violence. Examinations and any operative interference should be avoided.

When anæsthesia has been complete and prolonged for some hours, the bladder must be emptied; and it would be advisable, when using the catheter or making a vaginal examination, to avoid the induction of reflex action by giving a few whiffs of chloroform.

Conclusions.

1. Chloral is an agent of great value in the relief of pain during parturition.

1. It may be administered under favorable circumstances during and at the close of the second stage, with the result of producing absolute unconsciousness in the same sense in which we understand unconsciousness under chloroform.

3. When thus given successfully, it has this advantage over chloroform, that it requires no interference with the patient.

4. It is desirable to retain chloroform in the position which it at present occupies in midwifery, and to reserve for the agency of chloral the first stage of labor. If, however, chloral or some agent having analogous properties is found successfully to relieve the pain of uterine contraction, the use of chloroform will be restricted to a lesser period of the duration of labor, or to the facilitation of manual or instrumental interference.

5. It is demonstrated that a labor can be conducted from its commencement to its termination, without any consciousness on the part of the patient, under the sole influence of chloral.

6. The exhibition of chloral in nowise interferes with the exhibition of chloroform.

7. The proper mode of exhibiting chloral is in fractional doses of grs. xv. every quarter of an hour until some effect is produced; and according to the nature of that effect the further administration is to be regulated. Some patients will require doses of ʒi.; and it is better to produce an anæsthetic effect by ʒiii. given in the space of two hours than by ʒi. given singly.

8. The effects of chloral are continued beyond the period of completed parturition, and the repose experienced by the patient after her labor is one of the favorable circumstances to be noted in considering its application to childbirth.

9. Any stimulating effects, in the form of general excitability, occasionally observed during the administration, have passed away very rapidly.

10. Chloral not only does not suspend, but rather promotes uterine contraction by suspending all reflex actions which tend to counteract the incitability of the centres of organic motion.

11. Labors under chloral will probably be found to be of shorter duration than when natural, for unconscious contractions appear to have more potent effects than those which are accompanied by sensation of pain.

12. Experiments are required in order to determine whether there exists the same antagonism between ergot and chloral as is known to exist between strychnia and chloral.

13. The general conditions under which chloral is to be administered are the same as those which regulate the administration of chloroform, and the rules laid down by Sir James Simpson in connection with this subject must be rigidly adhered to.—*Edinburgh Medical Journal.*

Cancer a Disease of the Nervous System.—Dr. B. W. Richardson (*Am. Jour. of Insanity*) asserts that cancer is primarily a disease of the nervous system, and that the local change we call cancer, with the ulceration which caps it, is the equivalent of the change and death of part after complete arrest, produced by division of nervous communication.—*New York Medical Record.*

Bibliographical Notices.

The Practice of Medicine. By THOMAS HAWKES TANNER, M.D., F.L.S., Member of the Royal College of Physicians, &c. Fifth American from the Sixth London Edition. Philadelphia. 1870.

A Treatise on the Theory and Practice of Obstetrics. By WM. H. BYFORD, A.M., M.D., Professor of Obstetrics and Diseases of Women and Children in the Chicago Medical College, &c. New York. 1870.

The Physical Exploration of the Rectum; with an Appendix on the Ligation of Hæmorrhoidal Tumors. By WILLIAM BODENHAMER, A.M., M.D. New York. 1870.

WE have received the above works from the "Old Corner Book Store," and give them all the space at our command.

The first has already been fully reviewed in the Journal; it is simply a new edition of the well-known and valuable work of Dr. Tanner, with such additions as the advance in our knowledge of diseases and their treatment naturally demand.

The work of Dr. Byford's offers an excellent text book for the subject which it treats of. Were it not that we have so many excellent hand books on the same topic we should consider its appearance as very favorable; however, it will take its place with other similar works as a reliable guide. It is well, thoroughly and carefully written, and is illustrated by a series of plates, mostly new, and some of them showing points not hitherto expressed.

The author of the next is already favorably known in the profession for his diligent researches in a department of surgical science which, for reasons sufficiently obvious, is generally slighted in practice. His publications on "Anal Fissure" and on "Congenital Malformations of the Rectum and Anus," have taken an authoritative position in the literature pertaining to those subjects.

This volume is a companion-work to those monographs. In well-chosen language the author first describes in detail the anatomy of the rectum and anus, and then proceeds to elaborate the rules for the exploration of those parts, including the manual examination and the use of instruments—bougies, sounds, the speculum and the endoscope.

In an Appendix, the operation of the author for the ligation of hæmorrhoids is described. His modifications of the ordinary proceeding consist in the use of a fine ligature, not too tightly drawn, and in selecting the point of ligation so as to include no tissue save that of the new growth.

The whole work bears witness to the diligent and original investigations of a scientific observer. It is "respectfully addressed to the student and junior practitioner," but we feel sure that it contains many new ideas and practical suggestions which the profession in general will peruse with pleasure.

A Manual of Clinical Medicine and Physical Diagnosis. By THOMAS HAWKES TANNER, M.D., F.L.S., &c. Third American Edition, Revised and Enlarged, by TILBURY FOX, M.D. Philadelphia: Henry C. Lea. 1870. Pp. 366.

THIS edition of Dr. Tanner's well-known manual has been revised and enlarged by Dr. Fox. Important additions have been made to the medical anatomy of regions and organs, and all the new instruments and improved methods of diagnosis are sufficiently explained. The administration of ether is not referred to at all, while half of the brief article on chloroform is occupied by precautions against accidents and means of resuscitation. Some sections of the book, as that on Clinical Examination of the Insane, will not apply to this country; yet, taken as a whole, it is the most compact *vade mecum* for the use of the advanced student and junior practitioner with which we are acquainted. T. W.

Manual of Chemical Examination of the Urine in Disease. By AUSTIN FLINT, Jr., M.D. New York: D. Appleton & Co. 1870. Pp. 76.

THIS little volume is all that it professes to be. By its aid the practical physician will be able to elucidate all ordinary cases of urinary disease without recourse to the specialist. The reagents and apparatus which Dr. Flint has found most convenient for daily use are described, and an excellent series of tables at the end of the book are arranged to be cut out and posted up in the laboratory for reference during quantitative analyses. T. W.

NEUROMA.—The term neuroma (tumor of nerve), or rather *neuromes*, was first employed by M. Odier, of Geneva.

Medical and Surgical Journal.

Boston: Thursday, September 22, 1870.

THE RAISING AND EDUCATION OF FOUNDLINGS.

Dr. Jacobi, of New York, a member of the Medical Boards of the Infants' Hospital, Randall's Island, and of the Nursery and Children's Hospital, has laid before us, in pamphlet form, a valuable mass of information relating to the "Children of the State" in Europe, with a description of the methods employed by the various countries for saving the lives of foundlings and for rearing and educating them—a comparison, in fact, by figures, between the farming method of one country and the institution system of another. In the former method the infants are received, without question of parentage or condition, and are farmed out at once to worthy country people, with whom they remain till they are of age, or are otherwise apprenticed. They thus become, in fact, children of the State, and children and State become mutually dependent on each other. The institution method, known as the Germanic or Protestant, is that usually employed in our own country, and is well known. Both methods have for their object the saving of life and the raising of children into healthy men and women; their salvation is the country's good.

We have not space for extended data, but we make a few quotations in order to give the results at which Dr. Jacobi arrives in this question of so much interest to us as physicians and philanthropists.

"The great question, which system of raising infants is preferable, has not been answered in a manner satisfactory to all, it appears, for a good reason. There is a period in which the raising, the keeping alive, is of paramount importance and of great difficulty, and another one, in which the danger to physical existence is less imminent, but that of moral and mental degeneration more prevalent. Under all circumstances, the number and frequency of diseases is most overwhelming in early infancy, while both diseases and mortality diminish rapidly after a certain time, say after the sixth year. As a rule, the mortality is but one-tenth, between the sixth and fourteenth year, of that under six years. Thus I should ask the following questions:—

"How and where, in large institutions or in private homes, ought infants and children to be raised up to their sixth year?

"And: Is raising and education of children over six years easier, or preferable, in large institutions or in private homes?"

Dr. Jacobi enters into a series of statistics regarding the inmates of the Nursery and Child's Hospital, summing it up as follows:

"Now, then, there are ten deaths quarterly in 80 children, each one 4–5 months old at the date of admission. Grand total of 50 per cent. deaths yearly of children of 4–5 months and upwards to two years.

* * * * "The worst figures of the European foundling hells of former centuries are not more fearful than ours, and although being an officer of that institution myself, and believing that I and all the rest of us have conscientiously tried to do our duties, I cannot but testify and bow down to the truth, that in spite of all the efforts of the medical staff, and the painstakings of kind-hearted and self-sacrificing ladies, the probability of the lives of children entrusted to a public institution is very slim indeed. * * *

"Some of the causes of this constantly returning calamity have been given in this paper. The facts are sufficient to justify the abrogation of large institutions designed for the raising of young infants. The facts appear to show besides, that older children (not a single death occurring in 17 of an average age of five years) bear up easily under the same circumstances that are a source of death to the infants. * * *

"The question concerning the best mode of disposing of the children who have reached their sixth year, or the end of their ninth year, must be answered on the strength of the following considerations. The mortality of early age has closed by this time, it being ten times less between the sixth and fourteenth year than what it has been from birth to the sixth year. Therefore there is but little danger in recalling the children from their temporary homes in the country. Experience has taught me, and statistics prove, that mortality in public institutions at that period of life is not large. The reasons are evident. The children are active, their occupation is divided between playing, learning and light work. They are changing about between the playgrounds, dining rooms,

school rooms, work rooms and bed rooms. Ventilation, therefore, and a full supply of air are rendered easy. Thus not even the customary requirements of a certain number of cubic feet per head will hold good for institutions of that kind, less space being necessary than in hospitals. Thus there is no doubt that children of that age may be removed from the country to be transferred to their common city homes.

"Thus it appears, that while the earliest period of life requires farming out to private parties in the country, the more advanced age is more benefited by education in larger institutions. The mode of their management may differ in many respects. There may be a difference of opinion regarding the choice of small or large institutions. Some are in favor of uniting a limited number of children under the superintendence of a teacher, who, at the same time, is the superior of the common household. Some, however, favor large institutions. This much is certain, that whatever plan is followed concerning the education of children after their sixth year, the recalling them from the country homes ought to be considered as preferable to their remaining in seclusion."

NOTHING IS LAW THAT IS NOT REASON.

It was the implied pledge of the Editor of the Journal, in July last, to open its pages to the profession for fair discussion of any proper technical subject, so long as such discussion should be confined within reasonable limits of language and space. Unwilling to depart from a position which we feel to be, at once, an impartial and honest one, we have given space to the communication of Dr. Sullivan on the Resolution adopted by the Massachusetts Medical Society at its annual meeting.

The assertions of Dr. Sullivan in support of his theory of the rights and privileges of the Massachusetts Medical Society will, it is to be hoped, be compared with our Editorial on the subject, which we believe will satisfy any reasonable mind as to the question of our sympathy, support or defence of a class which we most emphatically denounce, to wit, quacks. We deem the subject one of vital importance, not only to the Society, but to the profession at large, and are equally anxious with Dr. S. that there should be no misrepresentation. Therefore we endeavored to present an impartial review of the facts bearing on the question at issue, without misconstruction of evidence, relevant or otherwise. In doing this, Dr. S. claims that we have misunderstood the force and purpose of the resolution—that we have perverted its meaning by saying that the force and purpose of the resolution is to expel those who embrace the doctrine, "formularized in any exclusive dogma," as he expresses it. If that is not its force and purpose, Dr. Sullivan must admit that its object was merely to obtain an expression of opinion; granting this, does Dr. S. maintain his ignorance of the fact that the majority of the Society discountenanced quackery before the resolution was passed as well as after?

As to our wandering to the question of "expediency or possibility of accomplishing the end contemplated thereby," we believe that its consideration will compare favorably with that of "green cheese," "adultery" and "table salt." Dr. S. believes that he has disposed of the questions of legality and possibility—this is theory, until proved. It behooves the champion of the anti-homœopathists to support his theories by facts. We think the majority of an interested profession will cordially support and approve acts which will show that quackery is no longer rampant in the ranks of a noble Society. With this reply we leave the matter before the profession.

AMERICAN DEGREES.

We find the following correspondence in recent numbers of our cotemporary, the London *Lancet*.

"Old Subscriber. The step seems decidedly irregular. Is it true that by the payment of a certain fee to an American Consul, the degree of M.D. can be obtained from American Schools?"*

"American Degrees. *To the Editor of the Lancet.*—Sir: In answer to your 'old subscriber,' I would hint that he had better find out whether or no Mr. Motley will accept of the money, and obtain for him the much coveted M.D.

"No, sir. I have the honor of holding the M.D. degree from Harvard University, Boston, U.S.A., which I obtained after com-

* Op. citat. August 6, 1870.

pleting my study there, and undergoing just as strict an examination as any one would have to do to obtain the qualification from any of the licensing bodies in Great Britain or Ireland, and I am just as proud of it as if I had obtained it in Edinburgh.

"Harvard University is the oldest medical school in America, having been founded in 1638, in the old town of Cambridge, Massachusetts, U. S. A. In the year 1828 it had 15 academic instructors; there were 52 graduates, 254 undergraduates, 30,000 volumes in the college and 4,600 in the student's library.*

"If your 'old subscriber' or any one else wishes to obtain any further information with regard to Harvard University, they will obtain a full catalogue by writing to D. Clapp & Son, 334 Washington Street, Boston, U. S. A.

I remain, Sir, yours faithfully,
M.D., F.L.S. and L.M.

August 8th, 1870."†

M.D. has done well in giving the refutation to the implied statement that medical degrees can be obtained for money in our respectable medical schools, and also in giving his honorable testimony to the worth of the University, to which so many of us look as our Alma Mater, both in letters and in medicine.

With a view to setting our English friends right in the matter, and to save our publishers the necessity for correspondence which M.D.'s suggestion has already brought upon them, we give the requirements for graduation which have been adopted by the Faculty of Harvard University.

Extracts from the Statutes of the University.—"Every candidate for the degree of Doctor in Medicine must comply with the following conditions before being admitted to examination:—

"1. He shall satisfy the Executive Faculty that he is of good moral character, and has arrived at the age of twenty-one.

"2. He shall have attended two courses of Lectures delivered at the Massachusetts Medical College by each of the Professors of the departments of Anatomy, Physiology, Chemistry, Materia Medica and Pharmacy, Morbid Anatomy, Midwifery, Surgery and Clinical Surgery, Clinical Medicine, and the Theory and Practice of Medicine; but if he shall have attended a similar course in any other College or University approved by the Executive Faculty, the same may be accepted in lieu of one of the courses above required.

"3. He shall have employed three years in his professional studies, under the direction of a regular practitioner of medicine. [Attendance upon the Summer School and one course of Lectures delivered at the Massachusetts Medical College, entitles the student to a certificate of one year's study.]

"4. If he has not received a University education, he shall satisfy the Executive Faculty in respect to his knowledge of the Latin language and Experimental Philosophy.

"5. He shall have given notice of his intention to the Dean of the Executive Faculty, four weeks previous to the day on which he presents himself for examination, and at the same time shall have delivered or transmitted to the Dean a dissertation, written by himself, on some subject connected with medicine."

At the time of his examination in the various branches of medicine, the applicant pays the graduation fee, thirty dollars. In this manner only can the degree of M.D. be obtained at Harvard University; *it cannot be obtained by purchase, by any person,* whatever may be his qualifications or his previous position. The requirements for graduation are the same or very similar at all the *respectable* American universities and schools of medicine, and at none of them are foreign qualifications of whatever character received in lieu of an examination; nor can the degree be purchased.

We regret that the action of certain irresponsible persons, who have recently offered to obtain degrees (by fraudulent means) from regular universities or from institutions actually non-existent, or, at least, without regular standing, has given rise to reports derogatory to the reputation of our respectable schools.*

RATIONAL MEDICINE IN ENGLAND. *Messrs. Editors,*—To mark the progress of rational medicine, please re-print the following ex-

* We are able to quote somewhat later dates than our friend M.D. gives (1828) in reference to the status of Harvard University. It has now a faculty consisting of 91 professors, lecturers and instructors; 563 students in its Undergraduate department, and 559 in its Professional schools, including 306 in the medical department. From the medical department 68 have been graduated in the past year. The University and Society libraries contain an aggregate of 184,000 volumes.

† Ibidem, August 13, 1870.

* Journal, January 13, and February 10, 1870.

tract from the "*Address on Medicine*," by Francis Sibson, M.D., F.R.S., &c., before the "British Medical Association," at its Annual Meeting, August, 1870. Not many years ago similar ideas, when advanced in this neighborhood, were received with great perturbation by English Journalists as well as by some of our own. The tone of authority in which such ideas are now stated is quite encouraging; axioms could not be expressed in more positive terms. Perhaps some of the disbelievers in progress hereabouts may be influenced thereby. We italicize a few phrases for their especial benefit.

x.

"Whatever may be the treatment adopted for disease, the influence of that treatment on the disease itself is less than the physician is apt to think. The great majority of diseases tend to get well. *They have, so to speak, a life-time of their own, with its periods of growth, maturity and decline.* They are the passing tenants of the body, which they occupy, often with great injury, for a limited time. *Treatment cannot change their nature*—cannot expel them at once—cannot quench them—cannot materially shorten or prolong their existence. But treatment can lessen the sufferings of the body occupied by disease, shield it from outer injury, repair its waste, and support and reinforce its powers; while it can ward off those causes that tend to increase or reawaken the disease, and lessen the intensity of its action, inflammatory or otherwise, especially upon the local structures. To watch, then, the treatment of a disease, is to watch, not, so to speak, the remedy and its immediate effects, but the disease itself, and its behavior during a certain method of treatment."—*London Medical Times and Gazette, Aug. 13th*, 1870.

Changes produced in the Blood by Extensive Burns, explaining Pulmonary Complications. By Dr. Feltz, Pathologist at Strasbourg.—In 1867, I showed experimentally, in a work entitled *Etudes des Embolies Capillaires*, that in severe burns there were important changes in the vessels in the neighborhood, and also in the great vessels, but in the latter only as the result of transmission, and in them the changes were only here and there. If hæmorrhagic deposits, more or less numerous, are found in the lungs, there can be little doubt that these are due to the coagulated masses found in the pulmonary veins. In 1861, Dr. Wilks had pointed out how frequently, in children who had been extensively burnt, death was due to pulmonary complications, though at times due to shock to the nervous system or to tetanus. He pointed out that complications, analogous to those found in purulent absorption or pyæmia, were present. In the vessels he showed deposits of fibrine more or less completely decolorized, in organs the frequent existence of hæmorrhagic spots resembling those found in purpura.

Wilks did not point out the relation between the pulmonary morbid phenomena and the lesions in central organs. The factor which he did not recognize I find in the capillary embolisms. This manner of death after burns is also found to follow extensive congelations. Michel (of Strasbourg) has recorded a case in which pulmonary embolisms were explained by the transmission of altered blood from superficial frostbite.

In 1868, M. Gustave Wertheim published interesting observations on this subject. According to him, the lesions observed in the organs after local burns or congelations, such as duodenal ulcers, hepatic, pulmonary and renal hæmorrhages, and even cerebral lesions, are the result of embolisms starting from the locally injured parts.

The following case affords in its autopsy most convincing results as to the mechanism of the pulmonary complications of an extensive burn.

W., æt. 22, robust and strong, fell into a vessel of boiling water. His arms, legs and back were fearfully burned, the cuticle being raised, and here and there separated in enormous blisters, and the exposed skin much reddened. He was admitted in great agony, shivering constantly, and complaining of intense cold. Lotions of chlorate of potash and a free use of opium relieved the symptoms. During the night vomiting and delirium came on, with difficulty of breathing. Next day he was sensible for some hours; but in the afternoon coma came on, with great difficulty of breathing, and he died at midnight.

Post Mortem.—The cuticle was nearly completely separated from both legs. The capillaries of the skin appeared black, and numerous purulent specks were visible in their vicinity. The blood in the small veins consisted mainly of debris of corpuscles, altered in shape and size, and frequent small black clots. The lungs were full of small black apoplectic spots, and careful examination of the blood composing them showed changes in each precisely similar to those already described in the peripheral veins. Had death not been so rapid, doubt-

less these deposits would have become purulent.—*Gazette des Hôpitaux.*

Atrophy of Skin and Muscles of Forearm. Under the care of Dr. H. S. Purdon.—The following case presents one or two points of peculiar interest, and is briefly recorded:—Jane M'E. æt. 16, admitted at the Hospital for Skin Diseases under the care of Dr. H. S. Purdon, December, 1865, for extensive ulceration of left forearm, supposed to be strumous; duration of disease two years. The patient was a pale, delicate, anæmic-looking girl, had never menstruated, and lived in an unhealthy part of the town. Her relations are all healthy. She could not attribute the disease to any cause. Stated that it began as an "income," which broke and left a small superficial "sore" that had gradually spread to its present extent, in length about five inches and between three and four in width. The ulceration had a peculiar velvety look and feel, secreted a little sanious matter, but gave no pain. The edges were bevelled off, and in color of a violet hue. The treatment prescribed was cod-liver oil and syrup of the iodide of iron, locally zinc ointment and balsam of Peru. After an attendance of three months' duration in which little progress was made, the patient was lost sight of till January, 1870, when she called again to show her arm. She was now much fatter, and stated that after leaving the hospital she went to reside at the seaside when her arm began slowly to improve, leaving, however, a permanent stiffness of elbow joint. About a year ago she began to notice that, in addition to the stiffness just mentioned, there was impaired motion, the arm and hand gradually becoming weaker, and the new cicatricial tissue rapidly contracting. Certainly her forearm and hand presented a most extraordinary looking appearance, the hand being swollen to fully twice its natural size, dense and brawny to the touch, gritting slowly on pressure; the forearm, in *three* distinct places, bound down by a dense hide-like skin of a glossy appearance, resembling the affection known as scleroderma, accompanied by atrophy of the muscles beneath—in fact, nothing but "skin and bone," to use the patient's own expression, and the unaffected portions were bulged out to an unnatural extent. Any treatment except amputation would be of little avail.—*Journal of Cutaneous Medicine.*

Case of Infantile Syphilis in one of Twins. By H. E. Cauty, Surgeon to the Liverpool Dispensary for Skin Diseases.—Margaret L. came on the 26th February, 1868, to the dispensary with a child, whose father is a shoemaker. She has had four dead-born children, and has been on treatment for secondary symptoms, though there are none at present visible. The child is one of twins, the other having no eruption or any signs of disease; they are both squalid, evidently badly nourished, and are at present ten weeks old. The child is one mass of scaly venereal eruption, the eyes and nose being especially bad. Owing to the nostrils being stopped up, it has great difficulty in taking the breast. It has been treated for some weeks at the Homœopathic Dispensary. The prognosis was very unfavorable.

There not being any part of the body as large as half-a-crown in any one spot free from scales or inflammation, where the lamina had peeled off, she was directed to anoint the whole body with an ointment of one-seventh of ung. hydrarg. fort. and ung. cetacei, and to give the child one-sixty-fourth of a grain of hydrarg. bichlorid. in ℥i. syrup sarzæ three times a day; also to wean it. On March 1st, the feet being better, gr. x. of ung. hydrarg. fort. was rubbed in every night, and glycerine applied to the flexions of the joints. March 4th—Eruption much better, but covered with varicella. 6th—Face quite clear; vesicular eruption subsiding. April 25th—Child quite free from any visible disease, and better altogether.

July 15th—The child was brought again; the mother, being starving, has had to suckle again. She herself has now ulceration of the throat, and white deposit on fauces. The child has psoriasis syphilitica and sores on the vulvæ, much diarrhœa, and flatulency. They attended some few times, getting gradually better, and then disappeared.

The points of interest in this case are—firstly, the rapidity of recovery from an amazing amount of unchecked disease, and the immunity of the other twin up to the last inspection in the middle of August from the poison the child and the mother suffered from. It also appears difficult to limit to what extent the use of mercury can be carried, not only with safety, but with advantage.—*Ibid.*

There were 187 deaths from smallpox in Paris for the week ending Aug. 24.

Death from Chloroform.—Dr. George Johnson, in a letter to the Editor of the London *Medical Times and Gazette*, writes as follows:—

"Dr. Richardson, in his lecture on death from chloroform, referring to the *post-mortem* appearances in cases of what he designates epileptiform syncope, states that the lungs are blanched and bloodless, the left side of the heart and the systemic arteries empty; while the right side of the heart and the whole systemic venous system are distended. Dr. Richardson explains the appearances thus:—'All through the body there is evidence on the arterial side of the circulation of intense arterial contraction. * * * * the arteries have poured their contents into the veins, and contracting firmly in their minute ramifications have shut up the blood in the veins, and produced complete arrest of motion throughout the circulation.'

"I find a difficulty in accepting this explanation of the facts. It must be borne in mind that the contraction of the minute muscular arteries has a stop-cock, and not a force-pump action, an obstructive and not a propulsive influence upon the circulation. Contraction of the minute ramifications of the systemic arteries would retain the blood in the arterial trunks, and not drive it on into the veins; and, again, driving the blood into the veins would not arrest the circulation if the blood were free to move through the lungs. The condition of the heart, lungs, and bloodvessels, which occurs in animals rapidly killed by chloroform, and which is also found in cases of acute apnœa, and of cholera collapse, appears to me to admit of only one explanation. Contraction of the minute pulmonary arteries arrests the blood before it reaches the capillaries. The closure of the arterial stop-cocks in the lungs tends to empty the vessels in front, and to distend those which are behind the seat of obstruction; hence, anæmia of the lungs, and emptiness of the left side of the heart, and the systemic arteries, while the trunks of the pulmonary artery, the right cavities of the heart, and the systemic veins, are distended."

Hypodermic Injection of Ergotin.—The *secale cornutum* has long been employed in midwifery for producing uterine contractions, and thereby checking uterine hæmorrhage; it has also long been successfully employed in nasal and pulmonary hæmorrhage. Quite recently Eulenburg has employed the hypodermic injection of ergotin in pertussis for its alleged narcotic properties. He observed that injections of 1-18th to 1-9th of a grain produced a considerable diminution of the paroxysms, and occasionally vomiting. Drasche has also recently employed the subcutaneous injection of ergotin in pulmonary hæmorrhage, and asserts that it *instantly* arrests the bleeding, and this assertion is so far confirmed by Von Gräfe, that he states that several years ago a nurse in his clinique was seized with so obstinate and severe an attack of hæmorrhage from the lungs as to resist every treatment employed, that he then injected ergotin hypodermically, and from that moment there was no more hæmorrhage. Langenbeck has also employed it in cases of hæmorrhage, and seemingly with benefit, though from compression having been simultaneously employed, the exact amount of good derived from the ergotin was not very readily ascertained. But in the treatment of aneurism by the hypodermic injection of ergotin, Langenbeck has certainly attained most wonderful results. He was led to employ it in these cases from the consideration that its action on the uterus and on the arteries was identical, and consisted in inducing contraction of the inorganic muscular fibres, and he hoped to diminish the aneurism by promoting the contraction of the muscular fibres scattered over it.—*Edinburgh Medical Journal.*

Hypodermic Injection of Morphia in the Vomiting of Pregnancy.—Of all means that I have tried this has proved the most successful. A grain of the acetate is dissolved in half a drachm of water, of which ten minims are injected in the epigastric region, and repeated after one, two, or three hours' interval until relief occurs. Sometimes one injection suffices, but generally two or three, or, it may be, even double doses (*i.e.* one-third grain) are required.—Dr. Baillie, *Indian Medical Gazette.*

Carrying the Obstetric Forceps.—Ellerslie Wallace, M.D., Prof. of Obstetrics in Jefferson Medical College, Philadelphia (*Am. Jour. Med. Sciences*), remarks to his medical class as follows: "I deny the right of any man to attend a case of labor, unless he carries his forceps with him; and I consider that teaching erroneous which says, Go without your forceps, but *send for them* when you see the probable necessity of their use."—*N. Y. Medical Record.*

Medical Miscellany.

Dr. William T. Lusk, recently appointed Lecturer in the Medical School of Harvard University, comes to us recommended in the strongest terms by leading practitioners and teachers in New York, by Profs. Fordyce Barker, Austin Flint, Jr., and others. He has already delivered two eminently successful courses of lectures at the Long Island College Hospital, and is spoken of by the best judges as preëminently qualified as an experimental teacher.

We can promise Dr. Lusk a cordial welcome on the part of the Faculty and the profession, and look forward with much interest to the new and enlarged course of instruction to be offered the students of the coming winter.

To Whom it may Concern.—We are requested to call the attention of the members of the Massachusetts Medical Society, who may be interested, to the advertisement of the Committee on "the Report of the Delegates to the American Medical Association, the counter statements of Dr. John L. Sullivan, &c.," in reference to a meeting of that Committee on Saturday next.

We call attention to the valuable opportunity offered in our advertising columns to a young or middle-aged physician to establish himself at once in a first-class practice.

An Interesting Experiment.—Dr. Richardson recently delivered the concluding lecture of his course on Experimental Medicine for the session 1869-70. It was remarkable for a very curious experiment, which appears to show that there is a direct and almost immediate passage of substances in the gaseous form through all the tissues of the body, and especially through the coats of veins. Dr. Richardson introduced a fine tube through the nostril of a rabbit into the cranial cavity. Air, or carbonic-acid gas, pumped through this tube, instantly made its appearance in the right cavities of the heart. The carbonic acid darkened the blood and stopped the systolic action. Atmospheric air rendered the blood of the right side arterial, and restored the systole. At some future time Dr. Richardson promises to announce the results to which he may be led by following out this line of inquiry.—*Lancet.*

A Description of the Discoverer of the Blood Circulation.—Aubrey says of Harvey: "He was not tall, but of the lowest stature; round-faced, olivaster (like waintscott) complexion; little eie—round, very black, full of spirit; his hair was black as a raven, but quite white twenty years before he died. I remember he was wont to drink coffee, which he and his brother Eliab did, before coffee-houses were in fashion in London. He was, as all the rest of his brothers, very cholerique; and in his younger days wore a dagger (as the fashion then was); but this doctor would be apt to draw out his dagger upon every slight occasion. He rode on horseback, with a foot-cloth, to visit his patients, his man following on foot, as the fashion then was, was very decent, now quite discontinued."—*N. Y. Med. Record.*

The Theory of Convulsions.—Professor Mantegazza (*Gaz. Lombard*) found that when rabbits are so far curarised that contraction of the voluntary muscles has ceased, convulsions are produced by the injection of concentrated urine, or a solution of urea, into the jugular vein. When from such a rabbit a muscle is cut out, which no longer contracts on the application of galvanism, and dipped in a solution of urea, it begins to contract spontaneously. He therefore concludes that urea is a direct stimulant to the muscular substance. On this supposition, he thinks that convulsions may be divided physiologically into three kinds. 1. Central convulsions, as in tetanus, tumors of the central nervous system, &c. 2. Peripheric convulsions in traumatic neuralgia, neuroma, &c. 3. Idio-muscular convulsions in uræmia, and perhaps under the influence of special poisons in the blood.—*Ibid.*

To Correspondents.—Communications accepted:—Modern Medicine.—Amputations; Combination Plan.

Erratum.—Page 159, second column, line fifteen, for "articulation" read *dislocation*. Page 152, first column, last line, for "whenever" read *wherever*.

Pamphlets Received.—Constitution and By-Laws of the Medical Society of the District of Columbia, with the Act of Incorporation and List of Members. Pp. 21. —The Alleged Mal-practice Suit of Walsh *vs.* Sayre. New York.

Deaths in sixteen Cities and Towns of Massachusetts for the week ending Sept. 17, 1870.

Cities and towns.	Total.	Prevalent Diseases			
		Cholera Infantum.	Consumption.	Dysentery and Diarrhœa.	Typhoid Fever.
Boston . . .	135	15	12	11	9
Charlestown	14	2	1	2	0
Worcester .	23	4	1	2	0
Lowell . . .	20	3	2	0	2
Milford . . .	5	0	1	0	0
Chelsea . . .	3	1	0	0	0
Cambridge .	17	7	4	1	1
Salem	9	2	1	0	0
Lawrence . .	9	0	1	0	3
Springfield . .	6	0	2	1	1
Lynn	19	7	2	0	3
Taunton . .	14	2	4	2	0
Newburyport	4	1	1	0	1
Somerville . .	4	2	0	0	0
Fall River .	19	2	2	4	0
Haverhill . .	3	1	1	0	0
	304	49	35	23	20

George Derby, M.D.,
Secretary of State Board of Health.

Deaths in Boston for the week ending Saturday, Sept. 17th, 135. Males, 73; females, 62. Abscess, 1—accident, 2—apoplexy, 4—inflammation of the bowels, 2—congestion of the brain, 4—disease of the brain, 6—bronchitis, 4—cancer, 6—cancrum oris, 1—cholera infantum, 15—consumption, 12—convulsions, 1—croup, 2—cyanosis, 1—diarrhœa, 8—dropsy, 1—dropsy of the brain, 1—drowned, 1—dysentery, 3—epilepsy, 2—scarlet fever, 3—typhoid fever, 9—hæmorrhage, 1—disease of the heart, 5—intemperance, 1—disease of the kidneys, 1—disease of the liver, 2—congestion of the lungs, 1—inflammation of the lungs, 3—marasmus, 7—old age, 5—paralysis, 2—peritonitis, 3—premature birth, 1—scalded, 1—suicide, 2—unknown, 10—whooping cough, 1.

Under 5 years of age, 50—between 5 and 20 years, 11—between 20 and 40 years, 27—between 40 and 60 years, 21—above 60 years, 16. Born in the United States, 101—Ireland, 20—other places, 14.